

REMARKS

The Office Action of August 11, 2004 has been carefully studied. The fees for the extra claims of this amendment and for the extension of time are attached herewith. The claims in the case are now 1-34. In the Office Action, there is an indication of the allowability of claims 15-23 if amended so as to comply with 35 U.S.C. 112, and it is believed that the newly added claims are so amended.

It is further seen that the specification is amended so as to bring forward the last paragraph on page 28 cross-referencing Applicants' concurrently filed application, also incorporating the patent number thereof. In addition, it is seen that the specification, abstract and claims are amended throughout so as to replace the expression "hose or hoses" by "conduit or conduits" respectively. The French priority application used the term "conduit" and this term is more correct since the term "hose" may be interpreted as being flexible which is not necessarily the case.

It is also seen that the abstract is amended for purposes of clarity and conciseness and placed on a separate page.

The following paragraphs correspond to the order of the paragraphs of the Office Action:

Claim Objections

With respect to claim 8, it is the Examiner's position that this claim does not further limit claim 1. Accordingly, this claim is now cancelled.

With respect to claim 13, the claim is amended by eliminating the word "said" in the expression "said secondary passage means".

Claim Rejections - 35 U.S.C. 112

The rejections of claims 2-4, and 10-12 are believed to be overcome since the claims appear to be concise and definite by virtue of the present amendment.

As to claims 2-4 and 10, attention is courteously invited to Figure 8 wherein space 3c is shown apart from spaces 3a and 3b, this space being further discussed on page 20 of the specification. Nevertheless, if in view of the specification and drawing, the Examiner desires additional or different language to be incorporated, any suggestions by the Examiner would be highly appreciated.

This also holds true with respect to claims 11 and 12 which are also amended. These are intended to cover the embodiment of Figure 10 as further described in the last 3 lines of page 21 and all but the last paragraph of page 22.

Rejection Under 35 U.S.C. 102(e) Over Nelson et al. U.S. 5,989,502

It is seen that claim 1 is substantially amended so as to point out Applicants' invention with greater particularity. By inspection, it is believed that several elements of Applicants' claim 1 do not find a corresponding element in the teachings of Nelson et al., for example, a second sealing element (5b) arranged between distributor-collector part (3) and said lower section (4) whereby said sealing elements permit fluid circulation substantially only in said distributor collector part. This feature is described on page 10 of Applicants' specification. The Examiner's reference to element 122 in Nelson et al. is inapposite inasmuch as element 122 is described as a bubble cap tray, which is generally a tray for permitting upwardly flowing gas to mix with downwardly flowing liquid as shown on attached page 404 of the text Elements of Fractional

Distillation, Robinson and Gilliland, 4th Ed, McGraw Hill, 1950. For providing an additional distinguishing feature, compared to Nelson et al., the structure of applicants' sealing elements is particularized in new claim 33 as imperforate solid disks transverse to the longitudinal axes of said tube, support being gleaned from the drawings, e.g., Fig. 4b.

Likewise, element 62 of Nelson et al. is described as part of a base whereas the lower part 4 in Applicants' invention, by inspection, defines an enclosure as seen from the drawings wherein element 4 comprises structure defining a substantially empty space in the elongated tube. If the Examiner is of the opinion that the term "enclosure" is not sufficiently descriptive, any suggestion by the Examiner would be appreciated.

Inasmuch as it is believed to be apparent that Applicants' invention and that of Nelson et al. are substantially different both in structure and intended use, it is respectfully submitted that Applicants' invention is neither anticipated nor made novel by the teachings of Nelson et al.

With respect to dependent claims 2-14, Applicants do not necessarily acquiesce to the discussion of these claims in the Office Action, but so as not to burden the record in view of the apparent allowability of claim 1, Applicants will refrain from a discussion of these claims at this time but reserve the right to provide a rebuttal at a later time, if ever necessary.

With respect to the newly added claims, it is respectfully submitted that except for claims 33 and 34, they are drawn to the allowable subject matter of claims 15-23, as follows:

New independent claim 24 is a combination of claim 15 and original claim 9 inasmuch as the Examiner has indicated that the inclusion of a valve is a non-obvious and novel combination.

New dependent claims 25-29 mirror the dependent claims dependent on claim 15.

New independent claim 30 is a combination of dependent original claims 9, 13 and 21

indicated to be allowable.

Claim 31 mirrors claim 22 but is dependent on claim 21.


New independent claim 32 is based on allowable claim 23

New claim 33 is described above and new claim 34 is directed to structure geared from the specification, page 10, last 12 lines and page 11 and first 5 lines.

Inasmuch as the application appears to be in condition for allowance, a notice thereof would be sincerely appreciated. However, if there remain any issues which can be expeditiously resolved by a telephone conference, the Examiner is courteously invited to telephone counsel at the number indicated below.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,


I. William Millen, Reg. No. 19,544
Attorney/Agent for Applicant(s)

MILLEN, WHITE, ZELANO
& BRANIGAN, P.C.
Arlington Courthouse Plaza 1, Suite 1400
2200 Clarendon Boulevard
Arlington, Virginia 22201
Telephone: (703) 243-6333
Facsimile: (703) 243-6410

Attorney Docket No.: PET-1855

Date: December 10, 2004

ERING SERIES

ering Committee

SHALL - Vice President, Heyden
oration

Consulting Chemical Engineer

Associate Director of Re-
development Company

Director, E. I. du Pont de

Director, Mellon Institute of
earch

Director, American Cyan-
y

Professor Emeritus of Chemical
University of Michigan

HITMAN - Professor of Chem-
ing, Massachusetts Institute of

ng

dustry (in Two Volumes):
ul Their Fabrication

ion

t and Control
illation
eory and Practice

ul Engineering

ynamics

les of Chemical Engineering

Elements of Fractional Distillation

BY

CLARK SHOVE ROBINSON

AND

EDWIN RICHARD GILLILAND

Revised and Rewritten

by

EDWIN RICHARD GILLILAND

*Professor of Chemical Engineering
Massachusetts Institute of Technology*

FOURTH EDITION
SECOND IMPRESSION

McGRAW-HILL BOOK COMPANY, INC.

NEW YORK TORONTO LONDON
1950

BEST AVAILABLE COPY

and through the down pipe to the plate below. The vapor flows up through the liquid on the plate and to the space above. For these flows to follow the desired pattern, the necessary pressure drops and hydraulic heads must be available.

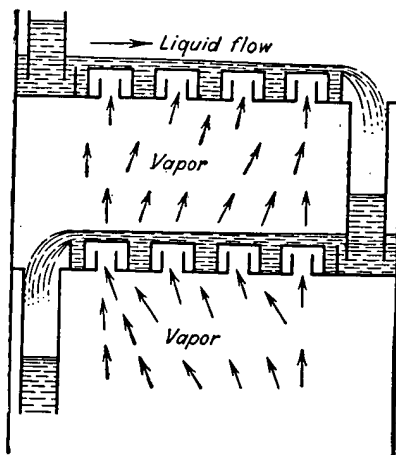


Fig. 16-1. Schematic cross-sectional diagram of bubble-cap plate column.

The liquid meets resistance in the down pipes, in flowing across the plate, and in flowing over the weirs. The frictional resistance in the down pipes is handled by making them of adequate cross section and height to take the liquid load. For a given cross section, in general the liquid-handling capacity of the down pipes will increase with increasing height but it is desirable to keep the height low in order to reduce the plate spacing. On the other hand, down pipes of large cross section reduce the available plate area for vapor liquid contact. In flowing across the plate the liquid decreases in depth owing to the frictional and kinetic effects giving the so-called hydraulic gradient. An overflow weir is employed

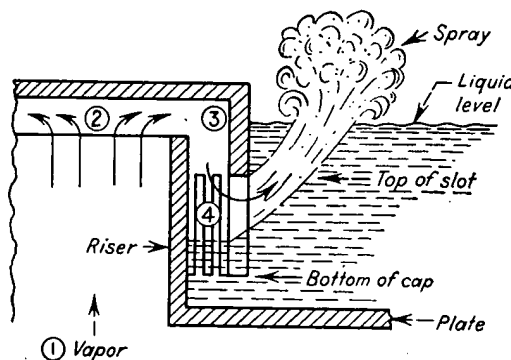


Fig. 16-2. Cross section of bubble cap.

to maintain the liquid level at approximately the desired level. These various factors are considered in detail in later paragraphs.

Pressure Drop for Vapor Flow. The vapor meets its main resistance in passing through the bubble cap and the liquid on the plate. Consider the section of a cap shown in Fig. 16-2. The vapor from the plate

below enters the reduction (1) to (2), cap, and the vapor then the liquid. the pressure flowing through the head above. Pressure velocity effect drop in inc

where $h_H =$
 $V_R =$

$g_c =$

$=$

$\rho v =$

The actual h_H . The data (Ref. 5) on 1 in. in diameter gave results 3.2, and Ed drop through investigator

Pressure h_s , is evidence of the slots. the pressure side the cap of flow. At obtained. Over rises until the below the top

BEST AVAILABLE COPY